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ABSTRACT

This review of the research on the evaluation of career education provides a review and synthesis of five major publications prepared for and/or published for the United States Office of Education and considers a number of problems and promises facing evaluators of career education in the eighties. Reviewed are reports prepared by Tuckman and Carducci in 1974, Development Associates in 1975, Enderlin in 1976, Bhaerman in 1977, and Bonnet in 1978. It is noted that no other small program within the Office of Education has devoted so much attention to evaluating its effectiveness on such a sustained basis. The overall conclusion stated is that the available evidence is more positive than negative, i.e., at present there is more reason to believe that career education is effective than that it isn't. Four issues discussed as concerns for evaluation in the eighties are "the career education treatment" (identifying what has been done in the name of "career education"): the need for immediate evaluation criteria for learner outcomes: finding and using proper control groups: and conducting longitudinal studies of the teaching-learning process. (MEK)

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MONOGRAPHS ON CAREER EDUCATION

# EVALUATION OF K-12 CAREER EDUCATION: A STATUS REPORT

by

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June 1980

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# EVALUATION OF K-12 CAREER EDUCATION: A STATUS REPORT

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## Introduction

Concerns relative to evaluating the effectiveness of career education have been prominent since inception of the movement in 1970. Early attempts to summarize and synthesize the literature on this subject are illustrated by reports prepared by Tuckman and Carducci [1] for the National Institute of Education in 1974 and by Development Associates for the Division of Vocational and Technical Education, U.S. Office of Education[2] in 1975. Since OE's Office of Career Education was created by Congress in 1974, several additional formal attempts to summarize and report on studies concerned with evaluation of career education have been published. These including one by Enderlein[3] in 1976, one by Bhaerman[4] in 1977, and one by Bonnet[5] in 1978.

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[1] Tuckman, B. W. & J.A. Carducci Evaluating Career Education: A Review and Model. Report No. 36. National Institute of Education (DHEW). Washington, D.C.: U.S. Government Printing Office, 1974.

[2] Development Associates, Inc. Evaluation of Vocational Exemplary Projects: Part D, Vocational Education Amendments of 1968. Prepared for the Division of Vocational and Technical Education, U.S. Office of Education, March, 1975.

[3] Enderlein, Thomas A Review of Career Education Evaluation Studies. Washington, D.C.: U.S. Government Printing Office, 1976.

[4] Bhaerman, Robert D. Career Education and Basic Academic Achievement: A Descriptive Analysis of The Research. Washington, D.C.: U.S. Government Printing Office, 1977.

[5] Bonnett, Deborah G. A Synthesis of Results and Programmatic Recommendations Emerging From Career Education Evaluations In 1975-76. Report prepared under Grant Number G007604329, Office of Career Education, U.S. Office of Education. Washington, D.C.: U.S. Government Printing Office, 1978.

In addition, OE's Office of Career Education has had prepared, under contract, two monographs - one by Mitchell[6] and the second by Bonnet[7] - designed to provide models for use by those involved in evaluating K-12 career education efforts. Further, OE's Office of Career Education has published two special monographs, one concerned with summarizing recommendations of invited experts on evaluation of career education[8] and the second summarizing presentations on evaluation of career education made at the 1976 Commissioner's National Conference On Career Education[9].

It seems safe to say that never has such a small program, within the United States Office of Education, devoted so much attention to evaluating its effectiveness on such a sustained basis as has been true for career education. Further, it also seems safe to say that, taken as a whole, the available evidence is more positive than negative - i.e., at present, it seems safer to say that career education can be effective than to say it cannot be effective. This fact will be illustrated by reports to be presented in this monograph.

The interest of the Congress in the evaluation of career education continues and is easily illustrated through study of P.L. 95-207, CAREER EDUCATION INCENTIVE ACT passed by Congress on December 13, 1977. Sec. 5(a)(2)(C) of that act

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[6] Mitchell, Anita M. Ways to Evaluate Different Types Of Career Education Activities: A Handbook of Evaluation Models. Palo Alto: American Institute for Research, 1978.

[7] Bonnett, Deborah G. Evaluation Design and Reporting In Career Education. Washington, D.C.: U.S. Government Printing Office, 1978.

[8] Hoyt, K.B. Perspectives On The Problem Of Evaluation In Career Education. Washington, D.C.: U.S. Government Printing Office, 1976.

[9] Datta, Lois-ellin et al Career Education: What Proof Do We Have That It Works? Washington, D.C.: U.S. Government Printing Office, 1977.

calls for reserving an amount not to exceed one-half of one percent of funds appropriated by Congress for purposes of carrying out a national evaluation of the effectiveness of career education programs receiving funds under the Act. Sec. 7(5) of the Act requires each State Education Agency receiving funds to provide proposed criteria to USOE for evaluating the extent to which the State will achieve its objectives under the State Plan. Sec. 8(a)(2)(D) allows the State Education Agency to use its State leadership funds under the Act for purposes of conducting statewide needs assessment and evaluation studies. Sec. 8(a)(3)(M) allows local school districts receiving funds under the Act to use such funds, in part, for conducting needs assessments and evaluations. It is clear that, as we move into the decade of the 1980s, the Congress desires that the emphasis on evaluation of career education apparent during the decade of the 1970s be continued.

One of the major problems facing career education at the present time is that most of the literature directly related to evaluation of career education has not yet found its way into referred journals and/or books. Instead, much of it is in the form of project reports submitted to the U. S. Office of Education and documents published as monographs by the U.S. Government Printing Office. Such reports tend to become part of the "fugitive literature" not readily accessible to those interested in the problem. Thus, the need for this monograph is seen, in part, as stemming from a desire to summarize some of the earlier published documents in one place in order to try to avoid the "fugitive literature" problem to the greatest possible extent.

A second need leading to production of this monograph is the need to reflect on experiences in evaluating career education during the decade of the 1970s in hopes that efforts conducted during the coming decade may profit from such experiences. Thus, the contents of this monograph are divided into two major sections.

In the first part, an attempt will be made to provide brief reviews of some of the major publications referred to earlier that have been prepared for and/or published by the United States Office of Education. The second major part of this monograph considers a number of problems and promises facing those who attempt to evaluate career education in the decade of the 1980s.

## Summary of Previously Reported Evaluation of the Effectiveness Of Career Education Efforts At The K-12 Level

As of the time this monograph is being written, limited copies of each of the documents to be reviewed in this section are still available. For those having access to such documents, it will obviously be desirable to study their entire contents carefully. Here, only very brief summary statements will be presented of what appear to be the critical content of each document along with brief reactions to that content. Taken together, they represent most of the data currently available within OE's Office of Career Education pertinent to evaluation of K-12 career education efforts.

Purposely omitted from this review are articles published in regularly published professional journals. It is assumed that interested readers can, if they choose, locate such articles for themselves. Also omitted from this summary are separate reports of doctoral dissertations concerned with the topic of evaluation of career education. These, too, are obviously available to interested persons who wish to locate them through such standard works as Dissertation Abstracts.

Bhaerman, Robert D. Career Education and Basic Academic Achievement: A Descriptive Analysis of The Research. Washington, D.C.: U.S. Government Printing Office, 1977.

The most comprehensive summary of efforts to evaluate career education in terms of its effectiveness in improving basic academic achievement was produced by Dr. Robert D. Bhaerman during the 1976-77 period during which Dr. Bhaerman

worked in OE's Office of Career Education. This activity included an attempt to discover and analyze all such attempts that had taken place during the 1970-75 period. A total of 38 studies are identified and reviewed in the Bhaerman monograph. Of these, two were doctoral dissertations, seven (including one involving only one teacher) were from local K-12 school districts, eleven from county K-12 school systems, two from Statewide studies, two from the "Partners in Career Education" series of studies conducted in Texas, four from OCE funded career education demonstration projects, and the remainder from evaluation studies related to Experienced Based Career Education (EBCE) conducted under auspicies of various regional R&D laboratories. The search for reports of evaluation studies for inclusion in this monograph included an ERIC search as well as access to other reports that had been sent to OE's Office of Career Education during the 1974-76 period.

Nature of the Studies: General Summary Statements. The majority of these 38 studies focused on mathematics (28 studies) and/or reading (23 studies). However, data were also reported on language arts (14 studies), studies skills (4 studies), social studies (3) and science (2). Apparently, the term "basic academic achievement" has been used to describe each of these subject matter areas. It is obvious that, most commonly, it refers to reading and mathematics. Locations in which these studies were conducted were found throughout the Nation with the greatest number coming from the Northeastern States (17 studies) and the fewest from the far-Western States (4 studies). The use of pre-tests and post-tests were seen in 25 of the 38 studies with the use of control as well as experimental groups found in 13 studies. Measurement instruments were, for the most part, nationally used norm referenced tests of basic academic achievement. Sample sizes varied from as few as 5 pupils to as many as several hundred. In terms of grade levels included, all grades, K-12 were found with most of these studies including pupils in Grades 3 - Grade 8.

Limitations of the Studies: Summary Statements. Bhaerman points out the most commonly cited limitations given by authors of the reports he reviewed as including: (a) problems relating to establishing control and experimental groups; (b) problems relating to procedures for implementing the career education program (e.g., "students did not receive a concentrated exposure"); (c) problems related to testing procedures; and (d) identified problems related to the short time period covered by the project. In addition, in a list of "general observations" found in the monograph, Bhaerman lists the following which could also be taken to represent some general limitations associated with the types of studies he analyzed: (a) there was no apparent common operational meaning for the term "career education"; (b) a detailed description of the career education "treatment" was often not clearly stated; (c) the scope of the studies varied widely; and (d) the quality of the reports also varied.

The Career Education "Treatment". While some of the studies Bhaerman reviewed apparently did not specify the career education "treatment" with any degree of clarity or exactness, those that did so led him to make the following generalizations regarding the nature of that "treatment": (a) it is a longitudinal effort beginning in the early elementary school and continuing throughout the formal education system; (b) it emphasizes the process of career development; (c) over half of the studies indicated the development of specific curriculum guides, units, learning modules or lesson plans for use in "infusing" career education concepts into regular classrooms; and (d) staff development for teachers was a common element in many of these studies as were use of community resources, field trips, site visits, and "hands on" experiences. The majority of these studies covered one academic year in length, but the range was large with some projects involving 2-3 years and others periods as short as 6-12 weeks. Bhaerman also reported that there seemed to be a tendency for those career education "treatments" described most fully as comprehensive efforts to be associated with more statistically significant findings whereas those studies reporting minimal and/or negligible effects of a career education "treatment"

also tended to report the treatment itself as "minimal."

In studying the detailed tables Bhaerman included to present a descriptive analysis of each study, it is most difficult to tell the extent to which the kind of career education "treatment" outlined in the OE Monograph A Primer for Career Education was followed, but my general impression was that large parts of that "treatment" were missing in most of the studies included in this monograph. On the other hand, where "treatments" were described in some detail, the general impression one receives is that there is a legitimate basis for calling what was done by the term "career education." The prime exceptions, of course, are those studies concentrating on the Experienced Based Career Education Model. When this classic model is used, the proper term is "EBCE" but it is not "career education."

Results: Of the 38 studies, 19 reported data indicating that reading and/or mathematics was impacted at the .05, .01, or .001 level of significance favoring pupils who had been exposed to career education or, in the case of the EBCE studies, that the treatment students maintained their growth in the basic academic skills areas. Sixteen studies were moderately supportive in that they reported data which either indicated reading and/or math grade equivalent score improvement, achievement gains for both experimental and control groups, or varied impact. Three studies reported data which indicated either negligible or minimal impact.

Of the 19 studies Bhaerman labels as "generally supportive," the apparent meaning of that term is that, on at least one of the areas of basic academic achievement included, statistically significant pre/post and/or control/experimental gains were registered for pupils exposed to the career education "treatment." Note that Bhaerman referred to such studies as "generally supportive" in spite of the fact that, within some of these studies, some of the comparisons failed to produce a positive effect for the career education "treatment." Of the 16 studies Bhaerman labels as "moderately supportive," that term appears to indicate that, in general,

while the career education treatment appeared to show some positive gains, such gains were typically not greater than those observed among control group pupils - i.e., that career education didn't lower basic academic achievement over what would have occured had no such treatment been present. The three studies Bhaerman labels as "unsupportive" were ones where no impact was seen.

Conclusions: In his "conclusions" section of this monograph, Bhaerman makes several generalized statements. The following quotations appear to represent the conclusions he reached:

> "...the Data Charts disclose that the experimental groups did not consistently outperform their counterparts. Yet, the overall data is reassuring. Looking not at one isolated report, but viewing the total picture, one can observe the situation as quite favorable. There are some who have felt that career education would hurt academic achievement. That is certainly not an interpretation this analyst would draw from the data."

> "The overall observation I would make is that academic achievement generally was either impacted positively or, when it was not, it did not interfere with that goal....I believe the general directions are positive and the overall tendencies are clear."

My own conclusions, based on study of the "Data Charts" which appear in the Bhaerman monograph, lead me to concur fully with his statement that the evidence he summarized certainly makes clear the fact that the kinds of career education "treatments" represented in these studies give no indications that career education acts to depress academic achievement - i.e., as Bhaerman says, "it doesn't hurt academic achievement." However, when I look closely at the "Data Charts" for those studies Bhaerman labels as "generally supportive," I find several where, in spite of the fact the career education "treatment" produced statistically significant differences in academic achievement of pupils in some areas, it failed to do so in others. There is no way of telling, with exactness, how many times the results were statistically significant and how many times they showed no statistically significant differences

between pupils who were exposed to the career education "treatment" and pupils who were not. Because of this, we do not know the extent to which those statistically significant differences reported are due to chance and how much they were <u>really</u> due to the career education treatment. Thus, these studies, while certainly promising, do not appear in any way to be conclusive.

In short, it seems to me these data tell us with a reasonable degree of certainty that a career education treatment has not lowered basic academic achievement, but they do not tell us, with an equal degree of assurance, that the career education treatment will improve basic academic achievement. The best they appear to be able to tell us is that the career education treatment <u>can</u> - and <u>sometimes</u> does - serve as a vehicle for improving basic academic achievement.

If the data found in the Bhaerman monograph were to be interpreted in the most negative way, one could say that they leave open the question of the probable impact of a career education "treatment" on academic achievement. That is, findings showing no statistically significant differences between experimental and control pupils obviously may result from any one of three basic conditions including: (a) there really are no differences; (b) the time period and/or experimental conditions may have been inadequate to demonstrate that the experimental pupils actually do out perform the control pupils; or (c) the time period and/or experimental conditions may have been inadequate to demonstrate that the control pupils actually out perform the experimental pupils. It is, of course, the third possibility that must concern us. It is very difficult to demonstrate, in a clear and convincing fashion, that <u>any</u> kind of "new" approach to the teaching/learning process actually improves academic achievement. The typical finding is one of "no statistically significant differences." Typically,

a time period extending over several years is required in order to demonstrate clear and conclusive results. These studies, by and large, did not cover a time period of over one year. Thus, we leave those who are "disbelievers" with as much basis for claiming that, in the long run, career education will be shown to have a negative effect on academic achievement as do the "believers" for claiming that, in the long run, it will have a positive effect.

More than anything else, these data demonstrate to me the absolute necessity for finding and/or conducting a series of solid evaluation studies using randomly assigned experimental and control pupils under conditions of pre/post testing where assurances can be given that the kind of "career education treatment" recommended in A Primer For Career Education is actually applied for a period of years with annual assessments called for. To date, no such comprehensive studies have yet been conducted to the best of my knowledge. They are certainly needed.

Enderlein, Thomas A Review of Career Education Evaluation Studies. Washington, D.C.: U. S. Government Printing Office, 1976.

While serving as an intern in OE's Office of Career Education during 1976, Dr. Thomas Enderlein was asked to complie a summary of available literature related to evaluation of K-12 career education efforts that had taken place prior to initiation of demonstration projects funded under provisions of P.L. 93-380, Section 406 (which began during the year Dr. Enderlein made his search). His review is divided into three major sections: (a) career awareness; (b) career decision making; and (c) academic achievement. Since the studies reviewed by Enderlein in the domain of the effect of career education on increasing academic achievement are included in the set of studies found in the Bhaerman monograph summarized earlier, they are eliminated from this summary.

Three impressive summaries of data found in the Enderlein monograph illustrate the problem of "fugitive literature" facing those who attempt to provide a comprehensive summary of the literature related to evaluation of career education. These three reports are referenced in the Enderlein monograph as follows:

Tuckman, B.W. & J.A. Carducci Evaluating Career Education: A Review And A Model. Report No. 36. National Institute of Education (DHEW). Washington, D.C.: U.S. Government Printing Office, 1974.

Development Associates, Inc. Evaluation of Vocational Exemplary Projects: Part D, Vocational Education Amendments of 1968. Prepared for the Division of Vocational and Technical Education, U.S. Office of Education, U.S. Office of Education, March, 1975.

Behavioral Research Associates Cochise County Career Education Project, Evaluation Report, 1974-75. Tucson, Arizona, 1975.

None of these three reports is readily available today to those seeking original data. Similarly, the Enderlein monograph itself may well also become largely unavailable within a few years. For these reasons, it seems appropriate here to reproduce the basic tables found in the Enderlein monograph from each of these three reports. They appear here exactly as in the Enderlein monograph.

**TABLE 1**

**STUDIES REVIEWED BY TUCKMAN AND CARDUCCI RELEVANT TO CAREER AWARENESS AND SELF AWARENESS**

| Author and Site of Study | Grade Level | Instrument | Analysis | Findings |
|---|---|---|---|---|
| Cochran and Weis (1972) Dayton, Ohio | 9-10 | Ohio Vocational Interest Survey | Analysis of covariance | ". . .students from the vocational school were better informed about career choice. . ." |
| Holstein (1972) Lincoln Co., West Virginia | 1-6 | Homemade test of Occupational awareness | Analysis of covariance | ". . .career education students outperformed control students on all measures." |
| Ovard (1973) Utah | 6 | Not specified | Chi square | ". . .students showed favorable change in attitude toward work. . ." |
| Sims (1973) Cleveland, Ohio | 5-6 | Job information questionnaire | Analysis of variance | ". . .treatment schools students had acquired more job information than the control." |
| McNulty (1974) Massachusetts | 11-12 | Career Maturity Inventory | Analysis of covariance | ". . .positive correlation between scores for all students. . ." |
| Warren (1974) Kansas | 6-8 | Career Maturity Inventory | t-test | ". . .significant differences in mean scores in favor of treatment group." |
| Bariolo (1972) Alameda Co., Calif. | Elem. | Occupational Information Survey | t-test | ". . .yielded greater gains for treatment students than for controls at elementary level." |

(Table 1 - continued)

| | | | | |
|---|---|---|---|---|
| Cunningham (1973)<br>New Britain, Conn. | Elem. | How I See Myself Scales | t-test | "...showed significant differences between the control and experimental groups." |
| Dennard (1973)<br>Clayton Co., Ga. | 4 | Student Knowledge of Careers | not specified | "...fourth graders in program had greater knowledge of career than those not in program." |
| Holden (1973)<br>South Carolina | Elem. | A battery of cognitive and affective instruments | not specified | "Kershaw and Chesterfield counties were fairly successful in efforts to teach elementary school students about careers." |
| Peck (1973)<br>District of Columbia | K-9 | Self Observation Scale | not specified | "...showed CDEP children to have better self-concept than controls." |
| " | " | Work Attitude Survey | not specified | "...revealed CDEP students had more positive attitudes toward work than controls." |
| " | 7-9 | Occupational Values Inventory | not specified | "...students were realistic in their career planning." |
| " | 6-9 | Career Awareness Development Inventory | not specified | "...students were able to relate school-learned skills to work situations at reasonable level of proficiency." |
| Young (1971)<br>New Orleans | 1-8 | Attitude Toward Work Inventory | t-test | "A significant positive gain was found for students in grades 1-8." |
| Harmond (1973)<br>Harrington, Maine | 7 | Occupational Knowledge Test | t-test | "...significant gain in mean scores of seventh grade students." |

TABLE 2

Summary of Conclusions for Outcome Questions Across All Projects by Student Group*

| Outcome Questions \ Student Groups | 6th Grade | 9th Grade | 12th Grade | | | |
|---|---|---|---|---|---|---|
| | | | Participating Teacher | Counseling Group | Work Experience | Skill Training |
| Are student participants able to identify a greater number of occupations than non-participants? (Q1) | Yes | Yes | Yes | Yes | No | No |
| Do students demonstrate more familiarity with tasks and functions associated with selected occupations than the comparison group? (Q2) | No | Yes | Yes | Yes | No | No |
| Are student participants more familiar with the requisitions associated with selected occupations than the comparison group? (Q3) | Yes | No | No | No | No | No |
| Do student participants score higher on pre-vocational, job readiness tests than the comparison group? (Q4) | Yes | No | No | No | No | No |
| Do student participants indicate more positive attitudes toward employment than non-participants? (Q5) | Yes | No | Yes | No | No | No |
| Is the variety of careers being considered by individual participating students greater than that of students in the comparison group? (Q6) | No | No | No | No | No | No |
| Do more student participants indicate having a career plan than the comparison group? (Q8) | – | No | Yes | No | No | No |
| Do more student participants cite their career preference as their expected career than non-participants? (Q10) | – | – | No | Yes | No | Yes |

*The questions were answered "yes" if there was an overall significant difference in favor of participants for any of the criteria used to assess the question.

**TABLE 3**

**COMPARISONS OF STUDENTS WITH HIGH AND LOW EXPOSURE TO CAREER EDUCATION ON SEVERAL DIMENSIONS RELATED TO THE ARIZONA CAREER EDUCATION MATRIX**

| | High Exposure Sample | Low Exposure Sample | t-test | Significance |
|---|---|---|---|---|
| | Secondary Students | | | |
| Educational Awareness | 46.8 | 44.3 | 3.01 | 0.001 |
| Knowledge of Skill Req. | 54.5 | 49.6 | 2.40 | 0.01 |
| Knowledge of Factors Contributing to Job Satisfaction | 63.8 | 55.7 | 3.40 | 0.001 |
| Common Threads in Jobs | 68.2 | 57.0 | 4.64 | 0.001 |
| Economic Awareness | 53.1 | 48.5 | 1.83 | 0.04 |
| Awareness of Career Mobility | 40.9 | 34.0 | 2.78 | 0.003 |
| Awareness of Factors Influencing Occup. Structure | 53.2 | 47.7 | 2.27 | 0.002 |
| Decision Making | 35.3 | 30.2 | 2.94 | 0.001 |
| Employability Skills | 26.6 | 24.4 | 3.04 | 0.001 |
| Appreciations and Attitudes | 45.3 | 37.0 | 3.90 | 0.001 |
| Knowledge of Career Clusters Score | 34.2 | 30.8 | 1.85 | 0.04 |
| Interest in Career Clusters Score | 25.9 | 24.7 | 1.97 | 0.025 |
| | Elementary/Intermediate Students | | | |
| Educational Awareness | 50.1 | 48.5 | 1.86 | 0.05 |
| Knowledge of Skill Req. | 59.4 | 50.5 | 3.45 | 0.001 |
| Knowledge of Factors Contributing to Job Satisfaction | 54.6 | 48.5 | 2.57 | 0.005 |
| Common Threads in Jobs | 65.7 | 59.8 | 2.12 | 0.01 |
| Economic Awareness | 58.2 | 52.6 | 2.24 | 0.01 |
| Decision Making | 61.5 | 54.7 | 2.67 | 0.005 |
| Appreciation and Attitudes | 60.2 | 54.9 | 2.01 | 0.020 |
| Knowledge of Career Clusters Score | 49.9 | 44.8 | 2.28 | 0.01 |

In addition to the data reproduced above, the Enderlein monograph provided brief summaries of findings - almost all of which were highly positive - from several other studies evaluating the effectiveness of career education. However, Enderlein's summary of findings failed to provide any detailed information regarding the specific career education "treatment" that was involved, the nature of the experimental design, or specific findings and/or conclusions. For these reasons, no attempt is made here to include yet another table summarizing such studies. The following quotes from the "Summary" found in the Enderlein monograph provides a general flavor with respect to the studies included in his review:

> "....In general, students who participated in career education projects achieved gains in occupational information, attitudes toward work, career maturity, knowledge of the world of work, and reality about their career planning. Findings relating to the effects of career education upon career decision-making were similarly positive: students who had participated in career education projects at both the elementary and secondary levels were better able to make decisions which required analyses of their abilities, needs and interests; of occupational roles; and the relationship of self to career plans.... Overall, the evaluation efforts to date display positive results in the many and varied aspects of career education."

Certainly, the brief descriptions found in the Enderlein monograph appear to be supportive of the general conclusions quoted above. However, because the actual studies themselves were unavailable for review at the time this monograph was written, it seems inappropriate to comment further on the contents of the Enderlein monograph.

Datta, Lois-ellin et al Career Education: What Proof Do We Have That It Works? Washington, D.C.: U.S. Government Printing Office, 1977.

At the Commissioner's National Conference on Career Education held in Houston, Texas in November, 1976, a major theme session was conducted using the title of this monograph. The monograph itself contains the formal statements made by presenters at this theme session.

The monograph begins with an introductory paper written by Dr. Lois-ellin Datta of the National Institute of Education. This paper is devoted primarily to a series of short critiques of the remaining papers presented. The concluding portions of the paper concentrate attention on some of the major philosophical/policy implications associated with efforts to evaluate career education. It is a very thoughtful paper and one that deserves much wider attention than it has apparently received to date.

The second paper, written by Dr. Elvis Arterbury, reported on two studies of the effectiveness of career education at the fifth grade level - one concentrating on the effectiveness of career education in increasing achievement in Language Arts and Social Studies and the second asking this same basic question with respect to academic achievement in mathematics. The Arterbury paper produced generally favorable evidence for both of these studies indicating that a career education "treatment" can produce significant gains in basic academic achievement among elementary school pupils. The Datta critique of this paper noted that these studies failed to distinguish that part of the "treatment" that associated itself with infusing career education concepts from that part associated with the instructional content itself. This is a major problem associated with a career education "treatment" oriented primarily around an infusion emphasis. That problem will be examined in some detail later in this monograph.

The paper written by Dr. Frank Rapley for this monograph described his attempts to evaluate a K-12 career education effort in the Jefferson County, Kentucky School System. While, due to lack of complete data due to problems associated with implementing a desegregation order, he was unable to perform all the statistical analyses he had hoped for, the data presented in this paper show gains in both reading and mathematics achievement for pupils exposed to the career education treatment. The most fascinating portions of this report are seen by studying the approaches being tried to evaluate a total K-12 career education effort rather than simply portions of that effort. The Datta critique of this paper warned readers not to make strong inferences concerning the worth of career education due to the weaknesses in the experimental design made necessary by the school reorganization problem. It also commended this paper to those interested in a total K-12 approach to evaluating career education.

One of the clearest - and best - examples of a report evaluating career education is seen in the paper prepared by Dr. Phil Spieth of the Dade County, Florida Public Schools. Dr. Spieth's description of the career education "treatment" is both clear and complete. While the particular "treatment" being described will not be one that all school systems will want to endorse, at least the description of what was done in the name of "career education" is made clear. While differences between experimental and control pupils reported in this study were not large, they were uniformly in directions favoring those pupils who had been exposed to career education. The Datta critique of this paper applauded the use of trend data over a period of years which Dr. Spieth had used. The clearest findings in this study were those indicating that the most favorable results are associated with those career education efforts that have been in operation for the longest period of time - thus emphasizing, once again, the importance of evaluating career education in a longitudinal design.

Dr. Richard Ruff, Arizona State Department of Education, presented a paper for this series summarizing major Statewide findings from Arizona K-12 school systems relative to evaluation of career education efforts during the 1971-75 period in the State of Arizona. This paper indicated that students with "high exposure," as opposed to "low exposure," to career education: (1) have a greater knowledge of the wide range of occupations available to them; (2) have an increased awareness and understanding of educational requirements for various careers; (3) have a better understanding of skills and abilities required for various careers; and (4) have an increased understanding of economic rewards associated with various careers. In critiquing this paper, Datta pointed to the need to assess independently the intensity and the quality of career education efforts - i.e., to separate out evaluations of "how much" from evaluations of "how well."

Finally, Dr. Sidney High presented a paper summarizing results from a small number of evaluation studies, each of which produced positive results indicating the worth of career education. The prime "message" found in Dr. High's paper is that career education CAN work - in spite of the fact that many things currently being done under the name of "career education" are so weak as to almost surely fail to work. Of these studies (1) three studies show evidence of improved academic skills; (2) five of improved work values; (3) four of improved career decisionmaking skills; (4) two of improved occupational and interpersonal skills; (5) fourteen of greater knowledge of educational/vocational opportunities; and (6) one indicating that career education provided students with an increase in the sense of control over their lives. Datta's critique of this paper reminded us that, positive as these data are, they will certainly not suffice to convince the true skeptic of the worth of career education - due, in part, to the fact that only short-term outcomes of career education were measured.

Bonnet, Deborah G. A Synthesis of Results and Programmatic Recommendations Emerging From Career Education Evaluations in 1975-76. Washington, D.C.: U.S. Government Printing Office, 1978.

During 1976, OE's Office of Career Education awarded a grant (G007604329) to New Educational Directions, Inc. whose purpose was to synthesize and summarize evaluation results available from the 108 K-12 career education demonstration projects funded by the U.S. Office of Education during the 1975-76 academic year. A total of 47 of these programs were in their third year of funding under provisions of Sec. 142(c), Part D of P.L. 90-576 while 61 were operating as one year projects funded under provisions of Sec. 406, Title IV, P.L. 93-380. Of these 108 projects, a total of 45 - including 26 Part D and 19 OCE (sec. 406) - contained evaluation data judged suitable for use in this project. These 45 studies were selected using the following critiera: (a) the report provided sufficient information about the measurement instrument for determining which outcome the study addressed; (b) the report indicated which of four grade-level groupings the students represented; (c) the outcomes of the career education group were compared to some reference group; and (d) the report indicated the direction of differences between means. There was no requirement that results be analyzed inferentially nor that the number of students, the sampling plan, or the specific student career education activities be identified.

The unit of analysis used in reporting results was called the "outcome study." An "outcome study" was arbitrarily defined as the assessment of one learner outcome objective at one grade level. For example, an evaluation investigating a K-12 program's impact on reading achievement, work attitudes, and career knowledge at each of Grades 4, 8, and 12 would, using this definition, consist of a total of 9 "outcome studies." Using this definition, a total of 500+ "outcome studies" were classified under one of the 10 "learner outcomes" found in the OCE monograph

entitled Perspective On The Problem of Evaluation In Career Education. Thus, a separate section of this report appears for each of these 10 "learner outcomes."

Treatment: Bonnet was unable, with the data available to her, to specify with any kind of exactness the particular kind(s) of "career education treatment" that produced the results reported in this monograph. As common traits, she listed the facts that all programs: (a) involved the development of materials, training of school staff, and involvement of the community; (b) shared the goal of preparing individuals for participation in the world of work; and (c) appeared to have embraced the basic definition, philosophy, and concepts of career education expressed in the 1975 USOE policy paper, An Introduction to Career Education. Within these broad common elements, she discovered very wide variation to exist in such important treatment elements as: (the proportion of students who had received whatever career education "treatment" was being offered; (b) the length of time the "treatment" had been applied: (c) the definition of "infusion" used in specifying the "treatment"; and (d) the extent to which elements in addition to "infusion" within regular classrooms were included in the definition of the "career education treatment."

Thus, while the results reported in this monograph can be said to reflect a career education "treatment" with some common philosophical meaning, they cannot be said to reflect a career education "treatment" with some common operational activities meaning. Apparently, the best that can be said is that some bonofide career education implementation strategies were used, but it is not known which strategies produced any given reported result at any specified level or length of application. The results reported in this monograph must be viewed given this severe restriction of meaning with respect to the exact "career tion treatment" that was used.

Design: The intent of this project was to synthesize evaluation results related to each of the 10 OCE "learner outcomes" as found in the 300+ "studies" identified

by the author. A necessary first step was to make subjective judgments regarding the extent to which the various measurement instruments used related to one of these 10 "learner outcomes." That is, no attempt was made to infer that the measurement instruments were designed to be direct measures of each "learner outcome." For some, the relationship is quite obvious while, for others, it is not. For example, there were fairly direct measures used to assess "knowledge of occupations" but, in lieu of direct measures of "self-understanding," measures were used intended to measure "self esteem."

For each of the 10 "learner outcomes," the following data were gathered and reported: (a) number of projects assessing that outcome; (b) the approximate numbers of students involved in assessments; (c) the number of "studies;" (d) the grade level categories (K-3, 4-6, 7-9, 10-12) used; (d) the type of research design used (e.g., "pre-post without comparison," "post with comparison"); (e) the number of "studies" with positive results significant at the .05 level; (f) the number of studies with positive differences between means; and (g) the probability that positive and negative differences are equally likely.

Further, the design called for a table specifying each of the measuring instruments used, the number of times the instrument was used at each of the grade levels, the number of times statistically significant results were obtained, and the number of times it produced positive differences between names. Those data are reported in an Appendix of this monograph.

The 10 OE "learner outcomes" were, in some instances, sub-divided into various "sub-outcomes" where, in the opinion of the author, this was justified. The following represent the "learner outcomes" used as major categories for summarizing results of the 500 + "studies:"

Learner Outcome #1-a: Competent in the basic academic skills required for adaptability in our rapidly changing society (READING ACHIEVEMENT)

Learner Outcome #1-b: Competent in the basic academic skills required for adaptability in our rapidly changing society (MATHEMATICAL ACHIEVEMENT)

Learner Outcome #2: Equipped with good work habits (ATTITUDES TOWARD SCHOOL)

Learner Outcome #3: Equipped with a personally meaningful set of work values that foster in them a desire to work.

Learner Outcome #4-a: Equipped with CAREER DECISION-MAKING SKILLS

Learner Outcome #4-b: Equipped with JOB-HUNTING and JOB GETTING SKILLS

Learner Outcome #5-a: Equipped with JOB SPECIFIC OCCUPATIONAL SKILLS and interpersonal skills at a level that will allow them to gain entry into and obtain a degree of success in the occupational society

Learner Outcome #5-b: Equipped with job specific occupational skills and INTERPERSONAL SKILLS at a level that will allow them to gain entry into and attain a degree of success in the occupational society

Learner Outcome #6-2: Equipped with a degree of SELF-UNDERSTANDING and understanding of educational-vocational opportunities sufficient for making sound career decisions

Learner Outcome #6-b: Equipped with a degree of self-understanding and UNDERSTANDING OF EDUCATIONAL-VOCATIONAL OPPORTUNITIES sufficient for making sound career decisions

Learner Outcome #7: Aware of means available to them for continuing and recurrent education

Learner Outcome #8: Either placed or actively seeking placement in a paid occupation, in further education, or in a vocation consistent with their current career decisions

Learner Outcome #9: Actively seeking to find meaning and meaningfulness through work in productive use of leisure time.

Learner Outcome #10: Aware of means available to themselves for changing career options - of societal and personal constraints impinging on career alternatives

Results: A "bird's eye view" of the extensive results found in this monograph are summarized, with respect to each of the "Learner outcomes," in the table which appears below.

Table : Summary of Results Obtained from 500+ "Studies" Reported in the Bonnet Monograph

| Learner Outcome | % "studies" with Positive results at .05 level | % "studies" with positive differences between means | Probability that positive and negative differences are equally likely |
|---|---|---|---|
| 1-a | 18% | 41% | NS |
| 1-b | 32% | 52% | NS |
| 2 | 10% | 44% | NS |
| 3 | 14% | 68% | Less than .02 (+) |
| 4-a | 29% | 70% | Less than .001 (+) |
| 4-b | Only 6 studies reported - one with statistically significant findings | | |
| 5-a | Not measured by career education. Perceived as a vocational education problem. | | |
| 5-b | 3% | 61% | Less than .05(+) |
| 6-a (1) | 9% | 57% | NS |
| 6-b (2) | 15% | 58% | NS |
| 7 | Only 1 study reported - it was positive | | |
| 8 | TOO EARLY TO EXPECT CONCLUSIVE DATA REGARDING THIS OUTCOME | | |
| 9 | Only 1 study reported - it was positive | | |
| 10 | Only 4 studies reported - 3 of which were positive | | |

In addition to the kinds of summary statistics illustrated in the table above, results are also summarized, in more detailed form, for evaluation studies associated with each learner outcome goal that produced positive results. An example of this kind of reporting can be seen in the following quotation referring to one of the studies evaluating the effectiveness of a career education infusion approach in the classroom on improvement of basic academic skills:

> "Perhaps the most encouraging results in the basic skills area were shown by a Part D program in Opelika, Alabama (2), where the infusion of career education into the curriculum involved ALL teachers and affected ALL students in the school system. In the spring of 1973 and again in the spring of 1976, all of the approximately 350 students in each of grades 3, 6, 8, and 9 were administered the reading and mathematics subtests of the appropriate levels of the California Achievement Test. In reading, system-wide average scores dropped a small but significant amount at grades six and nine but improved significantly at grades three and eight. The improvement at third grade was quite dramatic, with the 1976 third-graders' mean raw score (60.3) thirteen percent higher than that of 1973 third-graders (53.3). Mean scores in math improved at all four grade levels. Third, sixth, and eighth grade improvements were statistically significant and impressively large--thirteen percent at third grade, twelve percent at sixth grade, and twenty-two percent at eight grade."

A total of 14 career education demonstration projects are referenced specifically one or more times with descriptions of their results using a format similar to that given in the example above.

Conclusions: Bonnet includes a 1-2 page discussion/conclusions section for each of the 10 learner outcomes. Near the end of the monograph, she also provides a 1-2 sentence conclusion statement with respect to each learner outcome. These 1-2 sentence "conclusions," as given by Bonnet, are reproduced below:

Career education seeks to produce individuals, who, when they LEAVE school (at any age or at any level) are:

1. Competent in the basic academic skills required for adaptability in our rapidly changing society
   CONCLUSION: Overall, results are neither positive nor negative but in selected instances improvements were both statistically and educationally significant

2. Equipped with good work habits
   CONCLUSION: Measured attitudes toward school were affected only in isolated instances. Data concerning work habits are largely lacking

3. Equipped with a personally meaningful set of work values that foster in them a desire to work
   CONCLUSION: Good evidence of success has been demonstrated in strengthening youngsters' desire to work.

4. Equipped with career decision-making skills, job-hunting skills, and job-getting skills
   CONCLUSION: Career decision-making skills were strengthened with great consistency, Data concerning job-seking skills are sparse but somewhat promising

5. Equipped with job specific occupational skills and interpersonal skills at a level that will allow them to gain entry into and attain a degree of success in the occupational society
   CONCLUSION: For several reasons career education evaluations rarely evaluate job specific occupational skills. Results of interpersonal skills evaluation are encouraging but are not conclusive

6. Equipped with a degree of self-understanding and understanding of educational-vocational opportunities sufficient for making sound career decisions
   CONCLUSION: Self-esteem is rarely affected as it is currently measured, and no objective data of self-understanding were reported. Career awareness was achieved in the overwhelming majority of cases and there is reason to believe that the intent of the goal is being met on a broad scale

7. Aware of means available to them for continuing and recurrent education
   CONCLUSION: Evaluation results are lacking

8. Either placed or actively seeking placement in a paid occupation, in further education, or in a vocation consistent with their current career decisions
   CONCLUSION: It is too early to measure career education's influence on this outcome on a wide-scale basis.

9. Actively seeking to find meaning and meaningfulness through work in productive use of leisure time
   CONCLUSION: Only one study was reported; its results were promising

10. Aware of means available to themselves for changing career options - of societal and personal constraints impinging on career alternatives
    CONCLUSION: Evaluation results are sparse but very encouraging

Discussion: The Bonnet monograph represents a valuable addition to the literature concerned with evaluation of career education. It appears that she did a sound and credible job with the data available to her. Results in this monograph are especially pertinent to those making funding decisions with reference to career education at the federal level because each project is one funded with federal career education demonstration funds during the 1975-76 academic year. It is partly for this reason that a thoughtful discussion of the contents of this monograph are in order.

First, it is important to note that the OE "learner outcomes" for career education were designed in order that they might be applied to individuals at the point when such individuals leave the formal education system after having been exposed to a comprehensive K-12 career education effort. Each is obviously not intended to be applicable to students at any particular grade level within the K-12 education system. Thus, it is not surprising to find that, for the many "studies" Bonnet reported in which the participants were elementary school students, no clear results were in evidence.

Second, it must be noted that Bonnet emphasized the measuring instruments

available to her for use were, by and large, not constructed so as to be direct measures of these 10 "learner outcomes." Instead of having such measures available, she was forced to use measures which, in her opinion, had some indirect relationship to a given "learner outcome."

Third, it is essential to point out that, in actuality, Bonnet was unable, because of the nature of the data made available to her, to specify, with any degree of exactness, the nature of the career education "treatment" being evaluated. Neither was she able to determine how long whatever "treatment" existed had been applied nor, in many instances, whether or not it had been fully applied to ALL students included in the studies reported. It must be remembered that, during the 1975-76 academic year when these data were being collected, there had yet been no agreement with respect to what the "career education treatment" actually includes. There are available in her data assurances that some kind of career education "treatment" took place - thus justifying the analysis which she did. However, it would be extremely dangerous to take Bonnet's findings and conclusions as representing solid generalizations with respect to the worth of these K-12 career education efforts. It was simply the best she could do with the data made available to her. Bonnet acknowledges this in the body of the monograph.

Fourth, Bonnet's analysis illustrates very well (a) the need for measuring instruments more appropriate for use in evaluating career education's effectiveness, (b) the need to insist on sound evaluations for all Federally funded career education demonstration projects (note that only 45 of the 108 projects involved met the minimum criteria Bonnet established for inclusion in her analysis), (c) the need for evaluation systems for use in career education that do not depend on criteria related to outcomes expected only after a complete K-12 effort, and (d) the need for evaluations to be based on the presence of a well defined career education "treatment" that extends beyond one year in length. Each of these problems represents a serious current challenge for career education.

In spite of all the limitations obviously associated with both the data and the basic methodology Bonnet employed, her findings, overall, paint a generally positive picture with respect to the effectiveness of career education. Certainly, the evidence concerning career education's ability to positively affect (a) increases in students' desire to work, (b) increases in students' acquisition of career decision-making skills, and (c) students' awareness of the nature of occupations and the occupational society appear, even under these severe limitations imposed by the data available to Bonnet, to have been adequately demonstrated. Further, other than in the case of the one learner outcome judged inappropriate for use in evaluating career education and the one outcome regarded as inappropriate for use at this stage in the history of career education, all other "learner outcomes" produced some statistically significant positive results. In short, while these data do not, in any instance, support a claim that career education will produce such positive effects, they do support a claim that career education can produce positive effects given the right circumstances. The trends are, by and large, positive. At this early stage in the career education movement, this is most encouraging indeed.

The one "learner outcome" for which, to me, the data were most discouraging was the one related to career education's effectiveness in increasing students' achievement in the basic academic skills. Even here, the data support a contention that a career education "treatment" can produce positive results. The problem, I suspect, is two-fold here. In part, I strongly suspect that, in many instances, the full career education "treatment" (as outlined in the OCE monograph entitled A Primer For Career Education) was probably not applied. In part, I suspect it is a case of not applying that treatment to all pupils for a long enough period of time. Thus, while I am disappointed that these data did not appear more positive, I am not discouraged. I continue to remain firmly convinced that we will, given the proper application of the career education "treatment" be able to demonstrate career education's effectiveness in improving basic academic skills - especially where elementary/middle school pupils are involved.

Hamilton, Jack A. and Anita M. Mitchell Final Technical Report: Identification of Evaluated Exemplary Activities in Career Education (K-12). Palo Alto, California: American Institutes For Research, 1978.

This document summarizes activities performed under a contract given the American Institutes For Research (AIR) by OE's Office of Planning, Budgeting, and Evaluation. It represents the most comprehensive effort yet undertaken to identify and analyze current attempts to evaluate career education efforts by local K-12 school systems. The project called for AIR to identify those career education efforts that had been evaluated in a sound fashion, to identify the best of these, and to submit these to the Joint Dissemination and Review Panel (JDRP) for review and approval. The numbers involved in this AIR effort provide a good basis for judging the current "state of the art" with reference to the extent to which sound evaluations exist for existing K-12 career education efforts.

The project began with an attempt to identify existing K-12 career education efforts with sound evaluation data. A nationwide search turned up nominations of 394 existing K-12 career education sites. Of these, 257 submitted data to AIR for review. (It is, of course, not known whether the remainder did not have what they considered to be adequate data or whether they ignored the AIR request for materials).

Three levels of review were used for judging materials submitted. At Level I, materials were evaluated on 7 preliminary criteria including, for example, "the evaluation design includes a comparison group/standard of some kind," and "the evaluation report concludes that there is evidence of effectiveness." When submitted to this level of review, 64 of the 257 passed. Level II review was much more stringent especially in demanding that tests of statistical significance had been conducted for student outcome data. Twenty of the 64 sites passed Level II review. In Level III, a very stringent and comprehensive set of criteria were applied related to evidence

of effectiveness. Only 11 of the 20 sites who had passed Level II review also passed Level III. Of those who passed Level III review, 10 were submitted to JDRP and 7 of those 10 passed.

A brief capsule summary of each of these 7 projects is presented below in outline form:

1. Akron Career Development Program - Akron Public Schools - Akron, Ohio

   (a) Population: Grades K-10 (60% minority in urban school district)
   (b) Treatment: Infusion in classrooms with strong community involvement
   (c) Design: 40 experimental and 40 control classes - end of year testing
   (d) Results: Experimental (career education) students outscored control students in 35 of 36 comparisons of subgroups at the 3rd, 6th, 8th, and 10th grade level in the following cognitive areas:

      (1) knowledge of decision making
      (2) knowledge of "Individual and Environment"
      (3) Knowledge of self
      (4) Knowledge of employability and work adjustment skills
      (5) Knowledge of the world of work
      (6) Knowledge of economic understanding
      (7) Knowledge of education and training opportunities

2. Developmental Career Guidance Project - Pima County, Arizona

   (a) Population: Grades 4-12 pupils in mixed rural/urban setting; 20% minority
   (b) Treatment: Infusion of efforts into regular classrooms through leadership of counselors trained to be career development specialists
   (c) Design: End of year cognitive measures to students in 26 schools with "high exposure" to career education and 25 schools with "low exposure"
   (d) Results: Statistically significant differences favoring experimental (high career education exposure) over control at each grade level in:

      (1) Career awareness
      (2) Economic awareness
      (3) Career decision making skills
      (4) Employability skills
      (5) Appreciations and attitudes toward work
      (6) Knowledge of career clusters for broad groupings of occupations

3. Project CAP - Boston Mountains Educational Cooperative - Greenland, Arkansas

   (a) Population: Grades K-8 students in poor rural areas
   (b) Treatment: Infusion of career education concepts into regular subject matter by regular elementary school teachers
   (c) Design: Experimental/control classes of students, K-8, with one school designated as "experimental" and the other as "control"
   (d) Results: Experimental (career education) pupils showed statistically significant gains over control students in:

(1) Scores on a Career Awareness Test
(2) Scores on a Career Knowledge Test
(3) Scores on an Orientation to Career Concepts/Worker Activities Scale

4. Project CDCC - Coloma Community School District - Coloma, Michigan

(a) Population: K-6 pupils in both rural and urban areas
(b) Treatment: 27 career education curriculum units to be infused into regular subjects
(c) Design: Pre/post measures on138 career education performance objectives
(d) Results: Where sustained exposure occured, 95 of 138 performance Objectives were reached. Academic achievement in basic skills was not reduced and, in some cases, increased

5. Project CERES - Ceres Unified School District - Ceres, California

(a) Population: K-6 pupils in rural community
(b) Treatment: Infusion into regular classrooms; strong community involvement
(c) Design: Experimental/control classes with pre/post tests of career awareness and knowledge of careers
(d) Results: Statistically significant differences favoring experimental (career education) pupils on cognitive tests of "career awareness" and "knowledge of careers." Gains in academic achievement for low income pupils, but not for middle income pupils in experimental, as opposed to control, groups.

6. Project Equality - Highline Public Schools - Seattle, Washington

(a) Population: Grades K-6 pupils - predominantly white middle-class
(b) Treatment: Development and infusion of 3 sets of materials into classrooms designed to reduce effects of occupational sex stereotyping in both girls and boys
(c) Design: Experimental/control classes with pre/post testing
(d) Results: Experimental (career education) pupils showed statistically significant gains over controls in 15 of 17 comparisons.
(e) Conclusion: Given this treatment, pupils will expand their perceptions of job options open to females and to males

7. Project MATCH - Ontario-Montclair School District - Ontario, California

(a) Population: K-8 pupils in urban settings
(b) Treatment: Infusion of 110 career education objectives into regular subjects

(c) Design: Pre/post measures with experimental and control classes randomly assigned at each grade level

(d) Results: Statistically significant differences in cognitive items of career development at each grade level favoring experimental (career education) pupils over control pupils.

These seven "super" evaluation studies joined, in late 1978, with several earlier studies that had previously been approved by the JDRP and submitted for inclusion in the National Diffusion Network (NDN) publication of EDUCATIONAL PRACTICES THAT WORK. They make a most significant set of additions to the literature related to evaluation of career education.

One of the most valuable portions of this document consists of the list of all projects nominated to AIR for consideration in this project. That list provides a clear indication that evaluation of career education is a matter of high concern on the part of literally hundreds of K-12 school systems involved in implementing career education efforts. The fact that most of these have not yet developed the kinds of sophisticated evaluation designs that enable them to pass the rigid requirements of the JDRP appears to be more a function of the early stages of evolution in career education than it does a lack of interest in evaluation.

In looking at these seven "super" evaluation efforts, it seems worth noting that: (a) a majority of them concentrated at the elementary school, rather than the secondary school level; (b) most of these positive results were obtained using an "infusion" rather than a "special course" approach to implementation of career education; and (c) most of these studies used cognitive measures reflecting short-term, intermediate goals of career education. These observations hold important implications to be discussed in a different section of this monograph.

Summary of the Summaries

Of the 38 studies reviewed in the Bhaerman monograph, 19 reported statistically significant results favoring career education while an additional 16 indicated some support for contending that career education is effective. When the three tables reproduced from the Enderlein monograph are examined, one can see positive results reported for all 16 studies included in the Tuckman and Carducci report, for 6 of the 13 analyses made for 6th and 9th grade pupils in the Development Associates report, and for all 20 comparisons shown in the Cochise County Arizona career education project. Other studies reviewed in the Enderlein monograph but not included here were also generally positive.

If we eliminate from the "Career Education: What Proof Do We Have That It Works?" monograph those studies included in other documents summarized in this monograph, I count a total of 15 additional studies, each of which reported some favorable conclusions regarding the effectiveness of career education.

The Bonnet monograph, because of the unique way in which Bonnet defined an "outcome study," cannot be directly compared with the other monographs summarized here. The total of 45 evaluation studies included in the Bonnet analysis produced a grand total of 552 "outcomes," of which 99 were statistically significant at the .05 level of confidence and 352 showed positive differences between means favoring those pupils who had been exposed to career education. Of the 14 studies specifically referenced in the Bonnet monograph, all showed positive results demonstrating the worth of career education.

Finally, the Hamilton and Mitchell document shows clear and conclusive evidence concerning the worth of career education for the seven evaluation studies that successfully passed JDRP review. That same document clearly illustrates the need for better evaluation data in many other projects.

Taken as a whole, it certainly seems safe to claim that the evidence summarized in this set of monographs points to a conclusion that K-12 career education efforts can - and often do - produce favorable results. The overall picture is much more positive

than it is negative. There are some reasonably good answers that can be given to those who inquire with respect to whether or not career education is effective. This body of evidence should be sufficient to answer initial questions raised by the true skeptic. It will not, however, adequately answer questions raised by the true "disbelievers." For such persons, much more remains to be done.

The persistent difficulties one observes in studying the documents reviewed here can be summarized easily. First, there are serious questions, for many of the specific studies, regarding exactly what has been tested in the name of "career education." Second, there are serious questions regarding the relatively short time frames in which many of the studies have been conducted. Third, there are questions regarding the appropriateness of the measuring instruments used for assessing several of the "learner outcomes." Fourth, there are questions regarding appropriate models for use in evaluating career education. Finally, serious questions remain regarding the exact kinds of "treatment" given the "control groups" in many of the studies reported in this set of documents.

In hope of providing those charged with continuing and expanding efforts to evaluate career education efforts during the decade of the 1980s, let us now turn our attention to what appear to be the most basic problems facing us in evaluating career education efforts.

## Evaluation of Career Education: Issues For The 1980s

### Issue 1: The Career Education "Treatment"

The single most important issue to be resolved in designing and carrying out career education evaluation studies relate to the need to clarify and specify exactly what has been done in the name of "career education." A host of major problems must be faced if this issue is to be resolved.

First, in the basic OCE policy monograph, A Primer For Career Education, the "career education treatment" is defined in terms of a total of 53 roles and functions to be carried out by eight different kinds of "actors" in the delivery of career educa-

tion. In order to meet responsibilities for Federal leadership while simultaneously avoiding any implications of possible Federal control, these 53 roles and functions were written in terms of what is to be done in career education without specifying how each role and function is to be carried out. In order for those who evaluate career education to specify, with a needed sense of exactness, exactly what is being done in the name of "career education," it will be necessary for them to specify the "how" as well as the "what" aspects of the career education treatment. In brief, simply to assert that the career education treatment, as specified in A Primer For Career Education, was carried out will not be sufficient.

Second, it is both unreasonable and undesirable to attempt to demand that even the 53 general role and function statements found in the OCE definition of the "career education treatment" be carried out before one could say that "career education" is being practiced. It is unreasonable in view of the fact that, as with any aspect of Education, a number of schools of thought exist with respect to defining the nature and goals of "career education." Like the term "evaluation" itself, different experts assign differing meanings to the words. It is undesirable in that, if everyone approached the delivery of career education in the same basic way, opportunities for discovering new and better delivery approaches would be lost. Thus, the 53 roles and functions proposed by OCE must continue to be regarded as only one of several possible ways of defining the "career education treatment." Evaluators are, however, under a clear obligation to specify exactly what they mean by the term "the career education treatment." Too many,to date, have failed to accept this obligation.

Third, if the rationale behind the 53 roles and functions to be performed by the eight sets of "actors" pictured in A Primer For Career Education is accepted, it is obvious that what is to be evaluated will be a community effort, not simply an effort of the Education system alone. There will surely be a host of problems associated with verifying the degree to which such a total community effort is present, let alone

evaluating its effectiveness. The data collection problems inherent in verifying the presence of the effort clearly point to a concern relative to the evaluability of career education as a total community effort. Further, those who evaluate career education as a community collaborative effort will obviously have to do so based on concepts of community accountability for the success - or lack of success - of career education. It seems obvious that, to reach the stage in any community where this requirement can be met, a given career education effort will have to be in place for a period of several years. It would be completely unrealistic to attempt to evaluate career education in terms of these 33 roles and functions at the end, say, of only one year of operation. Still, some kind of evaluation of efforts at the end of even the first year will be called for. The model proposed in A Primer For Career Education will not be one that can be validly applied at the end of the first year of operation.

Fourth, if these 33 roles and functions are studied carefully, it will be obvious that each of them is, itself, subject to evaluation. Further, it will be obvious that the proper ways in which most, if not all, of these 33 roles and functions should be evaluated will require evaluative criteria quite different in nature from the OCE "learner outcomes" that are proposed for use in evaluating the total career education effort. At this point in time, proper evaluation designs for use in evaluating many of these 33 roles and functions have not been devised. Until they are devised and put into operation, it will be operationally impossible to evaluate the total "career education treatment" in terms of the OCE "learner outcomes."

Issue 2: The Need For Intermediate Criteria

A second basic issue facing those concerned with evaluation of career education is evident in the developmental, longitudinal nature of the career education concept itself. The career education "treatment" is one that is expected to begin no later than when the individual enters the formal Education system (and, hopefully,

even before that point in time in terms of home/family actions). It is expected to continue throughout the period of time the individual remains in the formal Education system. Further, it is expected to be a "treatment" that becomes available to persons at those times in their adult lives when they again have a need and/or desire to use Education as a means of helping to resolve work/education problems. In short, the career education "treatment" is seen, conceptually, as one that should be available to persons throughout almost all of the life cycle - including the retirement years.

In order to reduce this broad, philosophical view to one that is more nearly subject to systematic evaluation, OE's Office of Career Education has described "learner outcomes" for career education in terms of competencies and actions the individual should be expected to demonstrate at that point in time whenshe/he leaves the formal education system for the first time. This time of leaving may, in the case of high school dropouts, be prior to completion of the secondary school. For many persons, that point in time will be represented by high school graduation. For many others, it will be represented when one leaves a community college, a four year college/university system, or a graduate/professional school with an advanced degree.

For purposes of narrowing still further specification of career education "learner outcomes" to those that can be associated specifically with the K-12 portion of the Education system, the original "learner outcomes" specified in the OE policy paper An Introduction To Career Education has been further refined and narrowed to the nine "learner outcomes" listed in OCE's latest basic career education policy paper, A Primer For Career Education. While, at the time that paper was written, these "learner outcomes" were still being defined as though they apply to persons leaving the Education system at any age or at any level, they have been put in a form that will allow their initial use to be made at the point when the individual leaves the K-12 system of Education. The 9 "learner outcomes" included in this more restrictive

view include:

1. Competent in the basic academic skills required for adaptability in our rapidly changing society
2. Equipped with good work habits
3. Equipped with a personally meaningful set of work values that foster in them a desire to work
4. Equipped with career decision-making skills, job-hunting skills, and job-getting skills
5. Equipped with a degree of self-understanding and understanding of educational-vocational opportunities sufficient for making sound career decisions
6. Aware of means available to them for continuing and recurrent education
7. Either placed or actively seeking placement in a paid occupation, in further education, or in a vocation consistent with their current career decisions
8. Actively seeking to find meaning and meaningfulness through work in productive use of leisure time
9. Aware of means available to themselves for changing career options - societal and personal constraints impinging on career alternatives

The basic contention made in A Primer For Career Education is that, IF the 33 roles and functions outlined for the "career education treatment" are carried out properly DURING THE ENTIRE K-12 PERIOD OF SCHOOLING, each of these nine basic "learner outcomes" will be achieved. This is the basic contention that needs to be subjected to careful evaluation. To adequately test this contention will demand that data be collected for a given group of individuals, beginning at the Kindergarten level and continuing until graduation from high school, demonstrating that the complete "career education treatment" has, in fact, been adequately provided. Application of evaluation procedures for each of the nine "learner outcomes" should then be applied for persons who have received this verified "career education treatment."

This kind of evaluation of the "career education treatment" has not yet been undertaken. Since the formal career education movement did not begin until around

1970, it is obviously too soon to expect that this could have occured. Theoretically, there should be at least a few K-12 school systems somewhere in the Nation who began their career education efforts in the 1970-72 period and have continued them ever since. If such school systems could be located - and IF they had available the kinds of data required for verifying that the 53 roles and functions outlined in the "career education treatment" have, in fact,been taking place for pupils ever since they began as Kindergarten enrolles in the 1970-72 period, it could be expected that the kinds of evaluation studies most needed could be conducted sometime during the 1982-84 period. Realistically, this simply cannot be expected to occur both because (a) the career education concept was not fully developed during the 1970-72 period, and (b) no current K-12 school system has the kinds of detailed data required to verify the complete "career education treatment" has taken place. It seems more reasonable to believe that this kind of evaluation study probably will not be possible until sometime during the decade of the 1990s.

In the meantime, we will have to content ourselves with the use of only a portion of the nine "learner outcomes" and, in many cases, with the use of intermediate criteria rather than the ultimate criteria represented by the "learner outcomes" themselves. Further, we will have to recognize that, in the case of certain of these "learner outcomes," it would be grossly inappropriate to apply them to pupils at the elementary school level. This, in no way, means that no sound evaluations of career education's effectiveness can be conducted at this point in time. Rather, it simply means that the career education movement is still too young to be able to test its effectiveness in attaining all nine of the "learner outcomes." Further, while we are not yet in a position to evaluate the effectiveness of career education over the entire K-12 period of Education, we are now in a position to begin the process of longitudinal evaluation studies extending over a period much longer than a single school year - or portion of a single school year. The decade of the 1970s for career education was one characterized largely by short-term studies of the effectiveness of career education. The decade

of the 1980s will, hopefully, be one where evaluation studies cover a period of several years. If this can be done, then the decade of the 1990s can be one where evaluation studies cover the entire K-12 period of schooling.

Issue 3: Finding and Using Proper Control Groups

It is obvious that a variety of kinds of evaluation designs are needed in the evaluation of career education efforts. It is equally obvious that, among such designs, many persons will still place their highest values on the traditional "experimental/control" model which calls for persons in the "experimental" groups to receive the "career education treatment" while persons in the "control groups" receive some other "treatment." Thus, if the traditional "experimental/control model" is not regarded as sufficient for demonstrating the effectiveness of career education, it will continue to be necessary. There are several problems involved here, none of which have been adequately recognized to date.

First, it should be recognized that, in many of the currently existing evaluation studies, there has been an almost complete absence of the description of the "treatment" given to pupils in "control" groups. There exists as great a need to describe the "control treatment" as to describe, in exact terms, the "career education treatment." It is hoped that future evaluation studies will recognize this basic fact.

Second, it should be recognized that, in a broad, generic sense, the "career education treatment" demands that: (a) a sense of purposefulness be inserted into the teaching/learning process for both students and teachers - i.e., that students feel it is important to learn what is being taught and that teachers feel it is important to help students learn what is being taught; and (b) the broader community be used as a learning resource in the total educational effort. In the "career education treatment," an emphasis on the importance of education as preparation for work - paid and unpaid - as part of the person's total lifestyle is used as the basic vehicle for meeting those demands. The essential questions to be resolved here are: (a) should "control

groups: consist of "treatments" where these two demands are not part of the "treatment"? or (b) should "control groups" consist of "treatments" where these two demands are met through some vehicle other than the "careers emphasis" of career education? If the first of these two alternatives is adopted, one would have to assume that the teaching/learning process holds little meaning for either pupils or their teachers and that the education system has isolated itself from the broader community. While we know, of course, these conditions exist in many K-12 school systems today, to use these as "control groups" will surely be perceived by many as "stacking the cards" in favor of showing greater gains for "experimental groups" than for "control groups." It may be the best thing to do, but it is almost certain to result in this kind of basic criticism.

If, on the other hand, "control groups" are defined in terms of use of an alternative vehicle for: (a) making the teaching/learning process more meaningful to all teachers and all pupils at all grade levels; and (b) involving the broader community in the total educational process, then the "career education treatment" would have to be very powerful indeed if significant gains are to be shown for "experimental groups" as opposed to "control groups." Ideally, this would appear to be much preferable to the first alternative. The problem is one of identifying such an alternative vehicle that uses an emphasis on something other than "careers" while employing either the same basic strategies or a set of different basic strategies than those used in career education.

Those contemplating this alternative need to do so recognizing the basic strategies involved in the career education effort which have kept this effort going for 10 years - three times as long as the typical "educational reform" efforts that have come along in the past. Such strategies include: (a) promoting the effort based on a basic need perceived as real, important, and continuing in nature - as seen by educators, students, parents, and the general public; (b) choosing a need that is applicable to ALL pupils at ALL grade levels and within ALL subject matter disciplines in the education system; (c) choosing a need that influential community members will acknowledge as real and recognize as one for which their expertise would be helpful in meeting;

(d) choosing a need that involves "selling" rather than "buying" teachers - i.e., a need which, if met, will enhance the instructional goals of the teacher rather than being met through adding new tasks and responsibilities that may interfere with attainment of instructional goals; (e) choosing a need that will not only gain parental support but will, in addition, give parents clear roles and responsibilities; (f) choosing a need which represents one of the basic goals of Education which, if met, will enhance attainment of other basic goals of Education as well; (g) choosing a need which can be met without greatly increased costs to the education system; (h) choosing a need which will result in an effort clearly susceptible to clear evaluations; and (i) choosing a need which holds potential for becoming institutionalized as part of the basic fabric of the education system itself. By concentrating on the need to help ALL pupils better understand and solve problems of work/education relationships, career education has been able to use all of these strategies. To date, no such alternative strategy that also meets all these needs appears to be present.

As a result, the "career education treatment" appears to be one best compared with whatever else the school system was doing before the "career education treatment" started. If "experimental" and "control" groups are established in such a school system, it is obvious that it will be relatively easier to demonstrate career education to be "effective" in those school systems where low quality educational efforts existed than in school systems where high quality educational efforts were in place prior to the time a "career education treatment" was instituted. In any event, the "control treatment" is fully as important to describe and define as is the "career education treatment."

Issue 4: The Teaching/Learning Process

The teaching/learning aspect of the "career education treatment" represents a sufficiently important part of the previous issue so as to deserve as additional separate discussion.

In A Primer For Career Education, a total of 10 roles and responsibilities are assigned classroom teachers in the total "career education treatment." The following portion of these 10 roles and responsibilities are of concern here:

"1. Seeking to improve academic achievement through using a "careers emphasis" as a vehicle to:

   a. Introduce a sense of purposefulness and meaningfulness into the teaching/learning process for both student and teacher through emphasizing that one of the reasons for learning the subject matter is that people use it in their work.

   b. Use a positive approach with students through rewarding students for what they have accomplished rather than emphasizing what they have failed to accomplish, how much more they have to accomplish, or how many other students accomplished more.

   c. Introduce variety into the teaching/learning process through utilizing the personnel and physical resources of the broader community as vehicles for improving student achievement - for emphasizing that students can learn in more ways than simply through reading, in more places than the classroom, and from more persons than certified classroom teachers.

2. Consciously and conscientiously provide rewards to students who exhibit and practice such basic good work habits as: (a) coming to work (to school) on time; (b) completing assignments that are begun; (c) doing the best that they can; and (d) coooerating with one's fellow workers (students)

3. Combining a cognitive and experiential approach in the teaching/learning process through emphasizing the dual desirability of "doing to learn" and "learning to do"

4. Helping students acquire decision-making skills through using a project activity-oriented approach, when appropriate, in the teaching/learning process that allows students to actually engage in the decision-making process

5. Systematically attempting to reduce biases students may have with respect to race, sex, or handicapping conditions in ways that will maximize freedom of choice for all persons.

6. Helping students discover ways in which the subject matter being learned can be valuable to students in productive use of leisure time."

The remaining four "roles and responsibilities" assigned classroom teachers in the "career education treatment" are more specifically oriented around the "careers" emphasis. The six listed above, while involving use of a "careers emphasis" as a vehicle, quite obviously pertain to a generic set of activities which good teachers have always

practiced. This is undoubtedly one of the reasons some of career education's critics have complained that all career education advocates are asking for is "good teaching."

The question, in evaluating career education through the use of "experimental" and "control" groups, is one of whether or not, for pupils in the "control treatment," these six generic kinds of teacher activities are to be actively discouraged. If this were to happen, the net result might well be that the resulting evaluations would simply become a matter of comparing "good teaching" with "poor teaching." This would not appear to be a fruitful course to follow - in spite of the fact that it would obviously make "career education" look good. The only viable solution that I can see is to depend on comparing the "career emphasis" as a vehicle for producing good teaching with whatever other vehicles are being used by "good teachers" in the "control groups." Once again, evaluators of career education are faced with a situation where it will be much more difficult to produce positive evidence of the effectiveness of career education in schools where "good teachers" already exist than in schools where they don't. This is simply something that must be recognized and faced.

This problem points up clearly the importance of conducting career education evaluations over a period of years with longitudinal data rather than in a period of a single school year - or portion of a school year. Any procedure designed to improve academic achievement is likely to be faced with this same problem - i.e., real gains in academic achievement are not likely to occur with a very short time period.

## Concluding Remarks

The career education effort has been subjected to a wide variety of kinds of evaluation efforts during the decade of the 1970s - its first real decade of existence. On the whole, results of those evaluative efforts completed to date have been more

positive than negative. There is more reason to believe that career education is effective than there is to believe that it is lacking in effectiveness.

At the same time, the decade of evaluative efforts carried out during the 1970s has made clear some of the major problems facing career education in demonstrating both its worth and its effectiveness. Some of those problems stem from the fact that the career education concept is still evolving - thus making any kind of final statement with respect to the "career education treatment" an unattainable goal. A part of the general problem facing career education is its longitudinal, developmental nature that is going to demand longitudinal studies before its true effectiveness can be assessed. Coupled with this is an obvious need to evaluate the presence of the "career education treatment" itself as well as the effects of that treatment. This means that a variety of evaluation designs must be put into operation.

Finally, the greatest challenge facing those charged with evaluation of career education efforts will be that of specifying exactly what is done in the name of the "career education treatment" and what is done with groups used for comparison purposes. This is a crucial problem to be solved if the goal of retaining local control over career education efforts is to be maintained. The goal of working toward local autonomy and away from any form of Federal control is worthy enough so as to justify whatever effort is required to solve this problem.

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